Navy Quick Response Topics

These are special Navy topics recently added to the DoD SBIR 04.2 solicitation. The three topics below need a quick response to assist Operation Iraqi Freedom and the research and development is expected to be accelerated to provide results quickly.

N04-901 Technologies to Defeat Improvised Explosive Devices (IED's)

N04-902 Anti-Rocket Propelled Grenade (RPG) Technologies

N04-903 Anti-Mortar, Anti-Rockets, Anti-Missile Technologies

While the submission requirements generally follow those for the Navy 04.2 topics, there are a couple of significant differences: Small businesses shall apply first for a three to six-month phase I award of up to $100,000 (with no option) to test the scientific, technical, and commercial merit of a particular concept. If phase I proves successful, the firm may be invited to apply for a phase II award of up to $1,000,000 to further develop the concept.

The responsibility for the implementation, administration and management of the Navy SBIR program is with the Office of Naval Research (ONR). For general program and administrative questions related to topics N04-901 to N04-903, please contact the Navy SBIR Program Manager, Vinny Schaper at (703) 696-8528, or Deputy SBIR Program Manager, John Williams at (703) 696-0342. For technical questions about the topic, contact the Topic Authors listed under each topic on the website before **3 May 2004.** For general inquiries or problems with the electronic submission, contact the DoD Help Desk at 1-866-724-7457 (8AM to 5PM EST). Beginning 3 May, you must use the SITIS system listed in section 1.5c of the program solicitation to receive answers to technical questions.

The Navy's SBIR program is a mission-oriented program that integrates the needs and requirements of the Navy's Fleet through R&D topics that have dual-use potential, but primarily address the needs of the Navy. Information on the Navy SBIR Program can be found on the Navy SBIR website at **http://www.onr.navy.mil/sbir**. Additional information pertaining to the Department of the Navy's mission can be obtained by viewing the website at **http://www.navy.mil**.

PHASE I PROPOSAL SUBMISSION:

Read the DoD Program Solicitation at www.dodsbir.net/solicitation for detailed instructions on proposal format and program requirements. When you prepare your proposal, keep in mind that Phase I should address the feasibility of a solution to the topic**. For topics N04-901 to N04-903, the Navy only accepts Phase I proposals not to exceed $100,000. The technical period of performance for the Phase I should be between 3 to 6 months**. **DO NOT propose an option for Phase I.** Phase I proposals have a 25-page limit (see section 3.3). The Navy will evaluate and select Phase I proposals using scientific review criteria based upon technical merit and other criteria as discussed in section 4.0 of the program solicitation. Due to limited funding, the Navy reserves the right to limit awards under any topic and only proposals considered to be of superior quality will be funded**. The Navy will provide a small purchase agreement as a Phase I award**.

ALL PROPOSAL SUBMISSIONS MUST BE SUBMITTED ELECTRONICALLY. It is mandatory that the **entire** technical proposal, DoD Proposal Cover Sheet, Cost Proposal, and the Company Commercialization Report are submitted electronically through the DoD SBIR website at **http://www.dodsbir.net/submission**. If you have any questions or problems with the electronic submission contact the DoD SBIR Helpdesk at 1-866-724-7457 (8AM to 5PM EST).

Complete electronic submission includes the submission of the Cover Sheets, Cost Proposal, Company Commercialization Report, the **ENTIRE** technical proposal and any appendices via the DoD Submission site. The

DoD proposal submission site **http://www.dodsbir.net/submission** will lead you through the process for submitting your technical proposal and all of the sections electronically. Each of these documents are submitted separately through the website. Your proposal must be submitted via the submission site on or before the **6:00 a.m. EST, 17 June 2004** deadline. A hardcopy will NOT be required. A signature by hand or electronically is not required when you submit your proposal over the Internet.

Acceptable Formats for Online Submission: All technical proposal files will be converted to Portable Document Format (PDF) for evaluation purposes – do not lock/protect your pdf file. The Technical Proposal should include all graphics and attachments, but not include Cover Sheets. You are required to include your company name, proposal number and topic number as a header in your technical proposal document. Cost sheets can be included in the technical proposal or submitted separately through the form available through the Submission website. Technical Proposals should conform to the limitations on margins and number of pages specified in the the DoD Program Solicitation. However, your on-line Cost Proposal will only count as one page and your Cover Sheets will only count as two, no matter how they print out after being converted. Most proposals will be printed out on black and white printers so make sure all graphics are distinguishable in black and white. It is strongly encouraged that you perform a virus check on each file you upload. If a virus is detected, the file will be deleted. To verify that your proposal has been received, click on the "Check Upload" icon to view your proposal. Typically, your proposal will be virus checked and converted within the hour. However, if your proposal does not appear after an hour, please contact the DoD Help Desk. It is recommended that you submit early, as computer traffic gets heavy nearer the solicitation closing and slows down the system.

Within one week of the Solicitation closing, you will receive notification via e-mail that your proposal has been received and processed for evaluation by the Navy. Please make sure that your e-mail address is entered correctly on your proposal coversheet or you will not receive a notification.

PHASE I ELECTRONIC FINAL REPORT:

All Phase I award winners must electronically submit a Phase I summary report through the Navy SBIR website at the end of their Phase I contract. The Phase I Summary Report is a non-proprietary summary of Phase I results. It should not exceed 700 words and should include potential applications and benefits. It should require minimal work from the contractor because most of this information is required in the final report. The summary of the final report will be submitted through the Navy SBIR/STTR website at: **http://www.onr.navy.mil/sbir**, click on "Submission", then click on "Submit a Phase I or II Summary Report".

ADDITIONAL NOTES:

The Small Business Administration (SBA) has made a determination that will permit the Naval Academy, the Navy Post Graduate School and the other military academies to participate as subcontractors in the SBIR/STTR program, since they are institutions of higher learning.

The Navy will allow firms to include with their proposals, success stories that have been submitted through the Navy SBIR website at **http://www.onr.navy.mil/sbir**. A Navy success story is any follow-on funding that a firm has received based on technology developed from a Navy SBIR or STTR Phase II award. The success stories should be included as appendices to the proposal. These pages will not be counted towards the 25-page limit. The success story information will be used as part of the evaluation of the third criteria, Commercial Potential (listed in Section 4.2 of this solicitation) which includes the Company's Commercialization Report and the strategy described to commercialize the technology discussed in the proposal. The Navy is very interested in companies that transition SBIR efforts directly into Navy and DoD programs and/or weapon systems. If a firm has never received a Navy SBIR Phase II it will not count against them. Phase III efforts should also be reported to the Navy SBIR program office noted above.

PHASE II PROPOSAL SUBMISSION:

Phase II is the demonstration of the technology that was found feasible in Phase I. Only those Phase I awardees which achieved success in Phase I, as determined by the Navy Activity point of contact (POC) measuring the results achieved against the criteria contained in section 4.3, will be invited to submit a Phase II proposal by that Activity's

proper point of contact, listed in Table 1. During or at the end of the Phase I effort awardees will be notified to participate for evaluation of their proposal for a Phase II award. Evaluation criteria for the invitation will be based on the success to which the company has accomplished for the particular topic as evaluated by the monitoring activity/command. If you have been invited to submit a Phase II proposal to the Navy, obtain a copy of the Phase II instructions from the Navy SBIR website or request the instructions from the Navy Activity POC listed in Table 1. The Navy will also offer a "Fast Track" into Phase II to those companies that successfully obtain third party cash partnership funds ("Fast Track" is described in Section 4.5 of the program solicitation). The Navy typically provides a cost plus fixed fee contract or an Other Transition Agreement (OTA) as a Phase II award. The type of award is at the discretion of the contracting officer.

Upon receiving an invitation, submit your of a Phase II proposal ASAP (as soon as possible). Phase II proposals are limited to 40 pages (unless otherwise directed by the TPOC or contract officer). All Phase II proposals must have a complete electronic submission. Complete electronic submission includes the submission of the Cover Sheets, Cost Proposal, Company Commercialization Report, the **ENTIRE** technical proposal and any appendices via the DoD Submission site. The DoD proposal submission site **http://www.dodsbir.net/submission** will lead you through the process for submitting your technical proposal and all of the sections electronically. Each of these documents are submitted separately through the website. Your proposal must be submitted via the submission site on or before the Navy Activity specified deadline.

Recommend budgeting at least one trip to Washington in your Phase II cost proposal.

As with the Phase I award, Phase II award winners must electronically submit a Phase II summary report through the Navy SBIR website at the end of their Phase II. The Phase II Summary Report is a non-proprietary summary of Phase II results. It should not exceed 700 words and should include potential applications and benefit. It should require minimal work from the contractor because most of this information is required in the final report.

PHASE II ENHANCEMENT

The Navy has adopted a New Phase II Enhancement Plan to encourage transition of Navy SBIR funded technology to the Fleet. Since the Law (PL102-564) permits Phase III awards during Phase II work, the Navy will provide a 1 to 4 match of Phase II to Phase III funds that the company obtains from an acquisition program. Up to $250,000 in additional SBIR funds for $1,000,000 match of acquisition program funding, can be provided as long as the Phase III is awarded and funded during the Phase II. If you have questions, please contact the Navy Activity POC.

PHASE III

Public Law 106-554 provided for protection of SBIR data rights under SBIR Phase III awards. A Phase III SBIR award is any contract or grant where the technology is the same as, derived from, or evolved from a Phase I or a Phase II SBIR/STTR contract and awarded to the company which was awarded the Phase I/II SBIR. This covers any contract/grant issued as a follow-on Phase III SBIR award or any contract/grant award issued as a result of a competitive process where the awardee was an SBIR firm that developed the technology as a result of a Phase I or Phase II SBIR. The Navy **will** give SBIR Phase III status to any award that falls within the above-mentioned description. The governments prime contractors and/or their subcontractors will follow the same guidelines as above and ensure that companies operating on behalf of the Navy protect data rights of the SBIR company.

TABLE 1. NAVY ACTIVITY SBIR PROGRAM MANAGERS POINTS OF CONTACT (POC) FOR TOPICS

Topic Numbers	Point of Contact	Activity	Phone
N04-901 to N04-903	Vinny Schaper	DON	(703) 696-8528

PHASE I PROPOSAL SUBMISSION CHECKLIST FOR TOPICS N04-901 to N04-903:

All of the following criteria must be met or your proposal will be REJECTED.

____1. Make sure you have added a **header with company name, proposal number and topic number** to each page of your technical proposal.

____2. Your technical proposal has been uploaded. The DoD Proposal Cover Sheet, the DoD Company Commercialization Report, and the Cost Proposal have been submitted electronically through the DoD submission site by **6:00 a.m. EST 17 June 2004**.

____3. After uploading your file and it is saved on the DoD submission site as a PDF file, review it to ensure that it appears correctly.

____4. The Phase I proposed cost for the base effort does not exceed **$100,000**. The costs for the base identified on the Proposal Cover Sheet, in the cost proposal, and in the work plan section of the proposal should be the same.

N04-901 **TITLE:** Technologies to Defeat Improvised Explosive Devices (IED's)

TECHNOLOGY AREA: Weapons; Countermine/Mines

ACQUISITION SPONSOR: Marine Corps Systems Command

OBJECTIVE: Improvised Explosive Devices (IED's) continue to threaten US forces as they conduct overseas operations. This solicitation seeks to identify new ideas for detecting the presence of such devices and/or negating their effectiveness.

DESCRIPTION: There is no concise definition of Improvised Explosive Devices (IED's) beyond the general notion that they may be fabricated from war surplus ordnance, triggered via homemade means, and placed at fixed locations in anticipation that the intended target will eventually pass within range. Device placement is generally based on ease of concealment, and the likelihood that an appropriate target (frequently a US military vehicle) will pass close by. For devices that are detonated upon remote command, the ease with which the target area can be observed is also a likely consideration. This solicitation seeks novel technical approaches toward any of the following general concepts, including but not limited to:

- Field collection and analysis of forensic and biometric evidence associated with IED fabrication and/or use
- Detection of the act of IED placement
- Detection of monitoring or observation activities associated with potential IED locations
- Pre-characterization or pre-treatment of an area in a manner that makes subtle changes associated with IED placement more readily detectable.
- Detection of unique chemical signatures associated with explosive molecules and byproducts
- Disrupting the triggering mechanism within the IED
- Activating the triggering mechanism within the IED for deliberate pre-detonation
- Electromagnetic jamming or interference with the wireless transmission of detonation commands
- Electromagnetic emulation of wireless detonation commands for deliberate pre-detonation
- Destruction of electronic components associated with IED triggering or the transmission of detonation commands via directed electromagnetic energy

PHASE I: Demonstrate feasibility of the salient physical principal of the proposed approach in a laboratory environment. Conduct a theoretical effectiveness analysis of the proposed concept modeling the probability that the proposed concept could achieve its claimed benefits (or portions thereof) given the pertinent uncertainties of a realistic operational environment.

PHASE II: Design and construct an engineering prototype to be demonstrated at the end of this phase. The prototype will be sufficiently refined so that effectiveness of the embodied concept toward countering IED's can be evaluated in simulated encounters with representative surrogate IED's or components. During this phase, the theoretical concept effectiveness analysis from phase I would be refined into a prototype effectiveness analysis using measured performance parameters of the prototype device.

PHASE III: Refine the prototype developed in phase II so that it can be fabricated and evaluated in small numbers by operational forces. At this point the prototype should be sufficiently representative of the final product that all operational benefits, consequences and tradeoffs associated with full deployment can be clearly quantified via field trials. During this phase, limited numbers would be fielded with operational forces for evaluation and feedback. Prior to the completion of this phase, the prototype effectiveness analysis from phase II would be further refined into an operational effectiveness analysis by incorporating the pertinent observations and variables derived from field trials.

These field trials would constitute the basis for additional modifications as well as any subsequent procurement decision.

PRIVATE SECTOR COMMERCIAL POTENTIAL: Depending on the specific technology, some approaches may share applicability with law enforcement and security operations.

REFERENCES: The best source of current information on this topic is the Internet, via commercially available search engines.

KEY WORDS: Explosive detection, Mine detection, Electronic countermeasures

Why propose this topic: This topic addresses a persistent operational challenge faced by US forces deployed overseas. Consequently, DoD leadership has declared the resolution of this issue to be among their highest priorities. Although there is already considerable technical effort throughout the DoD addressed toward this specific subject as well as other closely related issues, this small business solicitation is intended to further enhance the possibility that yet additional novel solutions may be identified.

Category: Advanced Development

N04-902 **TITLE:** Anti-Rocket Propelled Grenade (RPG) Technologies

TECHNOLOGY AREAS: Weapons; EW Threat Warning and Ordnance

ACQUISITION SPONSOR: Marine Corps Systems Command

OBJECTIVE: This solicitation seeks novel technologies having the potential for protecting US forces from Rocket Propelled Grenades (RPG's).

DESCRIPTION: Rocket Propelled Grenades (RPG's) represent a persistent threat to overseas US military operations among indigenous local populations. These weapons are relatively inexpensive and widely available throughout the world. Despite their low cost, they are effective at disabling or destroying unarmored or even lightly armored military vehicles. There are a wide variety of RPG warhead types, but many employ a focused blast or shaped charge warhead capable of penetrating considerable armor, provided the warhead is detonated at the proper distance from the armor surface. RPG's are generally fired at short range, so the time between launch and impact is typically no more than a second or two. This solicitation seeks novel approaches for defeating the effectiveness of these weapons via concepts possibly including but not necessarily limited to:

- RPG launch warning and bearing determination
- Automated counter fire, or designation for engagement
- Interference with the timing of RPG warhead detonation
- Concepts for retrofitting of existing military vehicles with ballistic protection that can be easily applied or removed in the field.
- Novel concepts for light weight inhomogeneous and/or anisotropic ballistic armor capable of disrupting the axial symmetry of armor piercing shaped charge warhead jets.

PHASE I: Demonstrate feasibility of the salient physical principal of the proposed approach in a laboratory environment. Conduct a theoretical effectiveness analysis of the proposed concept modeling the probability that the proposed concept could achieve its claimed benefits (or portions thereof) given the pertinent uncertainties of a realistic operational environment.

PHASE II: Design and construct an engineering prototype to be demonstrated at the end of this phase. The prototype will be sufficiently refined so that effectiveness of the embodied concept toward countering RPG's can be evaluated in simulated encounters with representative surrogate RPG's or components. During this phase the theoretical concept effectiveness analysis from phase I would be refined into a prototype effectiveness analysis using measured performance parameters of the prototype device.

PHASE III: Refine the prototype developed in phase II so that it can be fabricated and evaluated in small numbers by operational forces. At this point the prototype should be sufficiently representative of the final product that all operational benefits, consequences and tradeoffs associated with full deployment can be clearly quantified via field trials. During this phase, limited numbers would be fielded with operational forces for evaluation and feedback. Prior to the completion of this phase, the prototype effectiveness analysis from phase II would be further refined into an operational effectiveness analysis by incorporating the pertinent observations and variables derived from field trials. These field trials would constitute the basis for additional modifications as well as any subsequent procurement decision.

PRIVATE SECTOR COMMERCIAL POTENTIAL: It is unlikely that this solicitation would lead to a device with applicability beyond military purposes.

REFERENCES: The Internet constitutes an excellent source of information on rocket propelled grenades (RPG's) as well as the tactics and circumstances associated with recent RPG attacks.

KEY WORDS: Armor, Ballistics, Infrared detection

Why propose this topic: This topic addresses a persistent operational challenge faced by US forces deployed overseas. Consequently, DoD leadership has declared the resolution of this issue to be among their highest priorities. Although there has been considerable technical effort throughout the DoD addressed toward this specific subject as well as other closely related issues, this small business solicitation is intended to further enhance the possibility that yet additional novel solutions may be identified.

Category: Advanced Development

N04-903 **TITLE:** Anti-Mortar, Anti-Rockets, Anti-Missile Technologies

TECHNOLOGY AREA: Sensors, Electronics, and Battlespace Environment; Radar Sensors/Electro-Optical Sensors

ACQUISITION SPONSOR: Marine Corps Systems Command

OBJECTIVE: This solicitation seeks novel approaches for countering the effectiveness of mortar, rockets, and missile attacks against US forces operating at fixed locations or in slowly moving vehicle convoys.

DESCRIPTION: Mortar, rocket, and missile attacks continue to constitute a threat to fixed locations associated with US operational forces or for slow moving convoys when a likely route can be anticipated in advance. Such attacks offer an attractive option to adversaries, because location of the launch point is often difficult to determine. Furthermore, among mixed friendly and hostile indigenous populations, the range and targeting information necessary for adversaries to conduct a precision mortar strike can be easily obtained. This solicitation seeks novel approaches for defeating the effectiveness of such attacks via concepts possibly including but not necessarily limited to:

- Detection and warning of the incoming mortar, rocket, or missile round prior to its achieving ballistic apogee
- Tracking of the round's ballistic trajectory so as to calculate both impact and launch point
- Automated precision counter fire
- Practical concepts for disabling the incoming mortar, rocket, or missile round

PHASE I: Demonstrate feasibility of the salient physical principal of the proposed approach in a laboratory environment. Conduct a theoretical effectiveness analysis of the proposed concept modeling the probability that the proposed concept could achieve its claimed benefits (or portions thereof) given the pertinent uncertainties of a realistic operational environment.

PHASE II: Design and construct an engineering prototype to be demonstrated at the end of this phase. The prototype will be sufficiently refined so that effectiveness of the embodied concept toward countering mortar attacks can be evaluated in simulated encounters. During this phase, the theoretical concept effectiveness analysis from phase I would be refined into a prototype effectiveness analysis using measured performance parameters of the prototype device.

PHASE III: Refine the prototype developed in phase II so that it can be fabricated and evaluated in small numbers by operational forces. At this point the prototype should be sufficiently representative of the final product that all operational benefits, consequences and tradeoffs associated with full deployment can be clearly quantified via field trials. During this phase, limited numbers would be fielded with operational forces for evaluation and feedback. Prior to the completion of this phase, the prototype effectiveness analysis from phase II would be further refined into an operational effectiveness analysis by incorporating the pertinent observations and variables derived from field trials. These field trials would constitute the basis for additional modifications as well as any subsequent procurement decision.

PRIVATE SECTOR COMMERCIAL POTENTIAL: It is unlikely that this solicitation would lead to a device with applicability beyond military purposes.

REFERENCES: The Internet constitutes an excellent source of information on mortar, rockets, and/or missile ballistics as well as the tactics associated with recent mortar attacks.

KEY WORDS: Ballistics, Radar Sensors, Electro-Optical Sensors

Why propose this topic: This topic addresses a persistent operational challenge faced by US forces deployed overseas. Consequently, DoD leadership has declared the resolution of this issue to be among their highest priorities. Although there has been considerable technical effort throughout the DoD addressed toward this specific subject as well as other closely related issues, this small business solicitation is intended to further enhance the possibility that yet additional novel solutions may be identified.

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